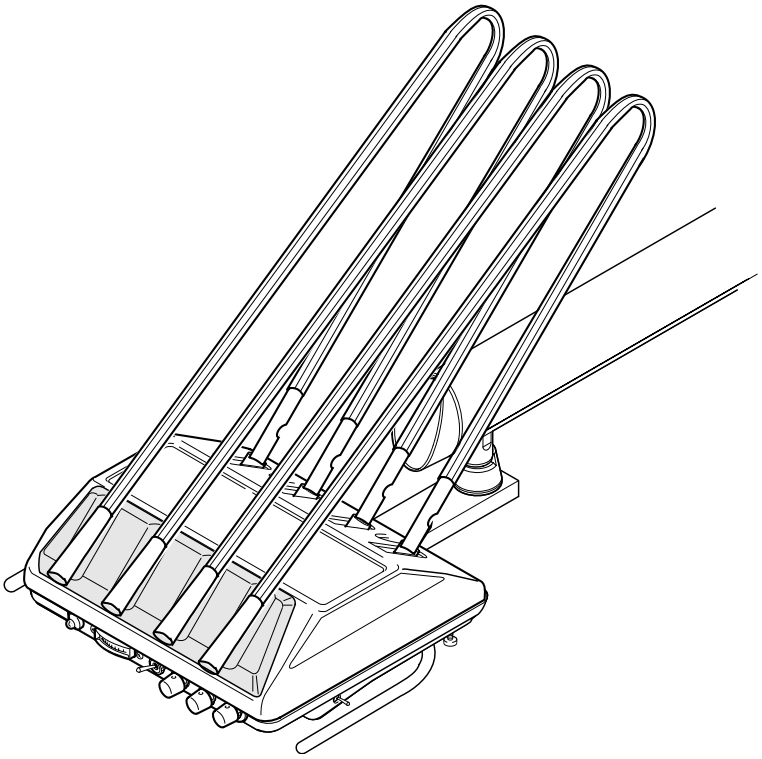
Knight®
by Midmark

Operation and Care Manual



Whip-style Delivery System

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CE 0088

TPW1697 Rev. G

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Owner's Product Identification

(Information that you will need to provide for servicing - key information is highlighted)

Date of Purchase	***Serial Number***
Name of Owner / Facility / Department	***Model Number***
Name of Authorized Knight Dealer	Telephone # of Authorized Knight Dealer
Address of Authorized Knight Dealer	

IMPORTANT INFORMATION

Intended Use of Product

This delivery system is intended to provide dental professionals with water & air to operate dental handpieces, syringes, and Midmark authorized accessories during dental exams and procedures.

Authorized CE Representative

Countries in the EEC should direct all questions, incidents, and complaints to Midmark's Authorized CE representative:

Promotal
22, Rue de St. Denis
53500 Ernee
France

Phone: 33-2-430-517-76
Fax: 33-2-430-569-10

Transportation / Storage Conditions

- Ambient Temperature Range ..... -22° to 140° F (-30° to 60°C)
- Relative Humidity ..... 10% to 90% (non-condensing)
- Atmospheric Pressure ..... 500hPa to 1060hPa (0.49atm to 1.05atm)

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Label Definitions

DANGER
A DANGER is used for an imminently hazardous operating procedure, practice, or condition which, if not correctly followed, will result in loss of life or serious personal injury.

WARNING
A WARNING is used for a potentially hazardous operating procedure, practice, or condition which, if not correctly followed, could result in loss of life or serious personal injury.

CAUTION
A CAUTION is used for a potentially hazardous operating procedure, practice, or condition which, if not correctly followed, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

EQUIPMENT ALERT
An EQUIPMENT ALERT is used for an imminently or potentially hazardous operating procedure, practice, or condition which, if not correctly followed, will or could result in serious, moderate, or minor damage to unit.

Type B, Applied Part

Consult manual for important information

Dangerous voltage / shock hazard

Fuse rating specification

Protective earth ground

Fragile

Proper shipping orientation

Min. / max. storage temperatures

Keep dry

Hot surface

ON

Standby

Duty cycle: (motor run time 30 sec. ON, 5 min. OFF)

up Fill water flow adjustment

Bowl Flush water flow adjustment

ity" water

Self-contained (distilled) water system

Handpiece drive air adjustment

andpiece / Syringe coolant water
ow adjustment

Handpiece coolant air adjustment /
Air quick connect port

Water quick connect port

Unlocked (chair rotation)

Locked (chair rotation)

Handpiece flush button
(Note: Remove handpiece from station then remove handpiece from tubing connector)

RATING FOR 120 VOLT UNIT

KNIGHT by MIDMARK, Versailles, Ohio, USA		
120 VOLTS	50/60 HERTZ	AIR 80/100 PSI WATER 30/50 PSI
15 AMPS MAX TOTAL CONNECTED LOAD		
THIS EQUIPMENT IS RATED TYPE I, CLASS B		

CONFORMS TO
UL STD. 2601-1
CERTIFIED TO
CAN/CSA - C22.2
NO. 601.1

RATING FOR 240 VOLT UNIT

KNIGHT by MIDMARK, Versailles, Ohio, USA		
240 VOLTS	50/60 HERTZ	AIR 80/100 PSI WATER 30/50 PSI
7.5 AMPS MAX TOTAL CONNECTED LOAD		
THIS EQUIPMENT IS RATED TYPE I, CLASS B		

CE

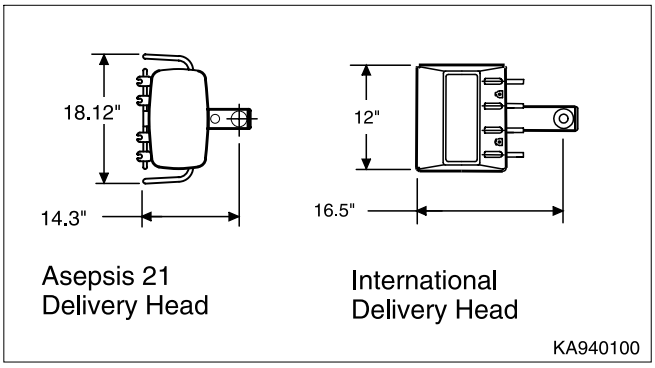
Introduction

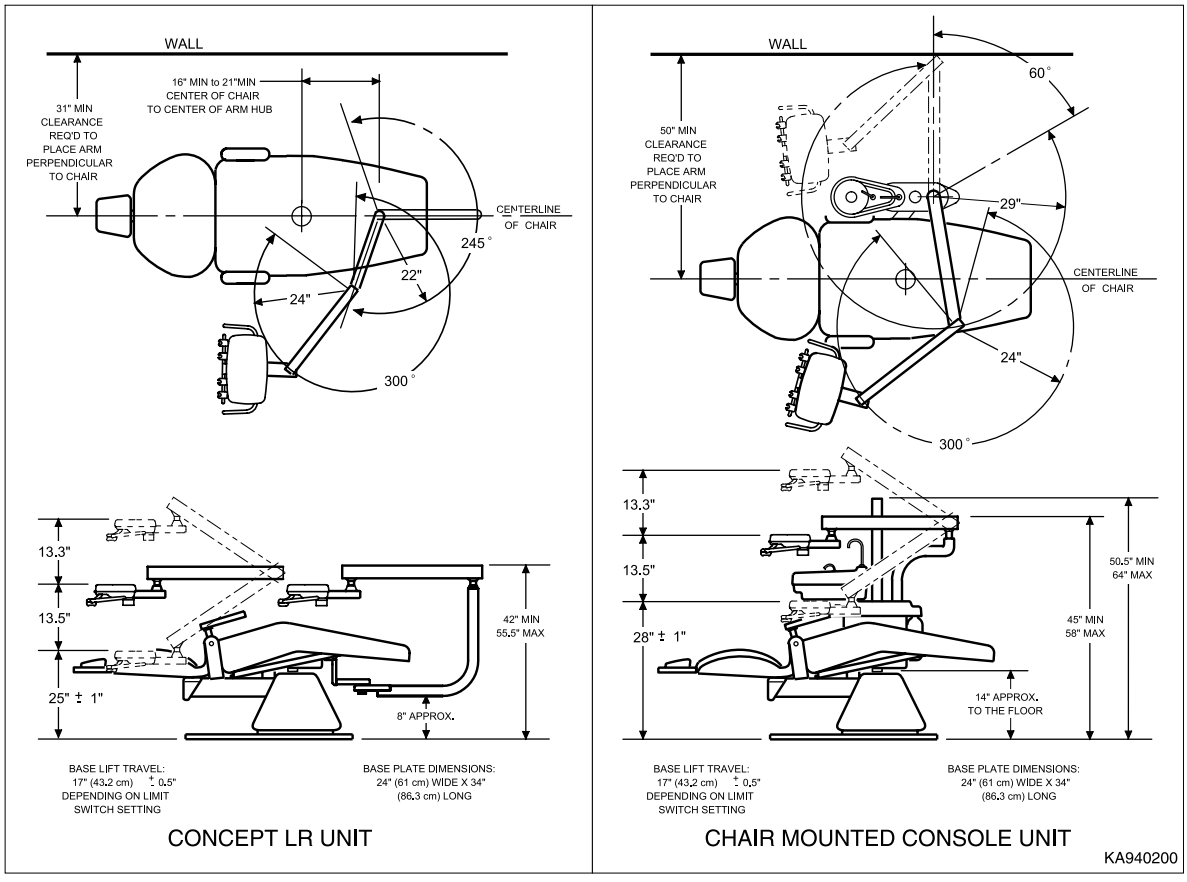
Your International Chair Mounted Delivery System by Knight has been designed and manufactured with care and you in mind. It is constructed of the highest quality material to provide years of trouble free service.

The instrument head provides for the control of up to five air operated handpieces and a 3-way syringe. The handpieces are stored in their respective holders which may be rotated to your preferred position. When the handpiece is removed from the holder, it is automatically selected to operate when the foot control is depressed.

Your new International unit also features a handpiece lubricant collection system. The handpiece exhaust tubes from the four port handpiece tubes are connected to a collector jar which is located on the bottom center of the instrument head. The collection jar can be removed to be emptied and cleaned simply by unscrewing it from the unit. The collector jar should be inspected daily and emptied when approximately 1/2 inch of oil has accumulated.

The aerodynamic shape of the instrument head lends itself to easy cleaning or wrapping for infection control.





Controls

1. INTERNATIONAL HANDPIECE DELIVERY SYSTEM CONTROLS LOCATED ON THE LOWER FRONT OF THE INSTRUMENT HEAD:

A complete set of handpiece and syringe adjustments are located for convenient use on the lower front of the international instrument head. All controls are labeled with symbols identifying their function. A description follows and their locations are identified below.

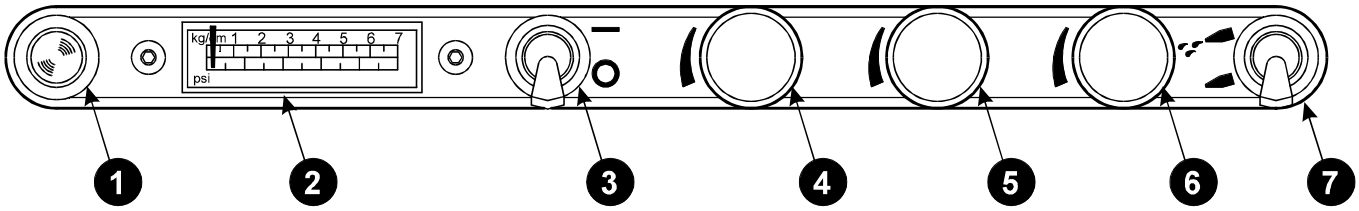
I~
VISUAL ON/OFF INDICATOR
When the red indicator is visible, the main air and/or water are turned on and the unit is ready for operation.

2~
HANDPIECE PRESSURE GAGE
This gage indicates individual handpiece pressure when the handpiece is operating.

3~
MAIN ON/OFF SWITCH
This switch turns the main air and water on or off. This function is indicated by the visual on/off indicator
(item # 1)

4-5-6~
HANDPIECE COOLANT WATER VOLUME
These knobs adjust the amount of coolant water to each respective handpiece.

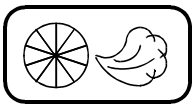
7~
COOLANT WATER ON/OFF
This adjustment conveniently turns the water on or off to any handpiece without effecting the water volume setting. controls the volume of coolant delivered to each handpiece.



Controls

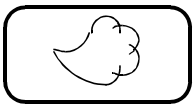
2. CONTROLS ON THE BOTTOM OF THE INSTRUMENT HEAD:

These controls are provided to adjust the maximum handpiece operating pressure, coolant air spray pattern and syringe spray pattern (air and water volume). Adjust these controls to handpiece manufacturers specifications and/or personal preferences for the desired settings. All controls are labeled with symbols identifying their function as shown below.



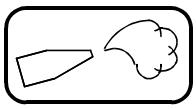
DRIVE AIR PRESSURE SETTING

An adjustment is provided for each handpiece. Use to set the maximum handpiece pressure indicated on the gage located on the lower front control panel. Refer to the manufacturer's handpiece specifications for the proper setting.



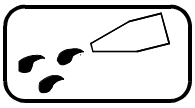
COOLANT AIR VOLUME ADJUSTMENT

This adjustment controls the volume of coolant air delivered to each handpiece and effects the spray pattern of air and water at the handpiece. If the handpiece has a coolant air connection itself, this adjustment may have no effect and can be completely shut off.



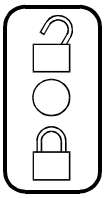
SYRINGE AIR VOLUME ADJUSTMENT

This adjustment controls the volume of air to the syringe and effects the air water spray pattern.



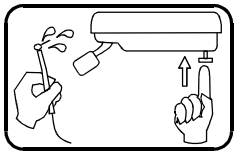
SYRINGE WATER VOLUME ADJUSTMENT

This adjustment controls the volume of water to the syringe and effects the water spray pattern.



ARM LOCK CONTROL

Located on the right side of the instrument head below the handle, this toggle switch controls the locking mechanism in the unit flex arm.



HANDPIECE COOLANT WATER FLUSH BUTTON

This button controls the coolant water flush valve and is located on the left front underside of the delivery head.

Controls

EXTERNAL CONTROLS AND FUNCTIONS

MASTER ON /OFF VALVE
Located on the bottom center of the instrument head directly behind the handpiece holder bar support, this two position toggle control turns the main air and water on or off (See the illustration below).

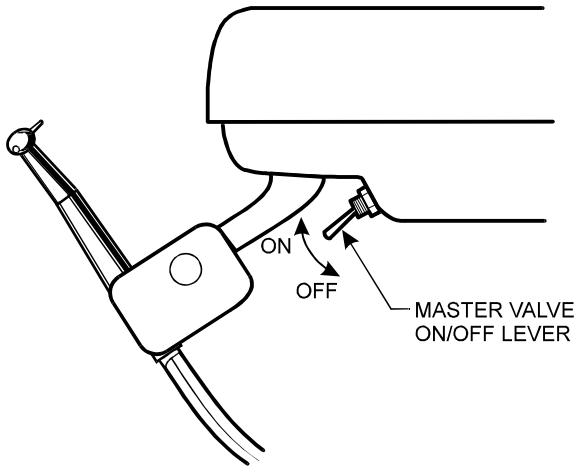
ARM LOCK
Located on the bottom of the instrument head adjacent to the handle, this two position toggle controls the arm lock mechanism.

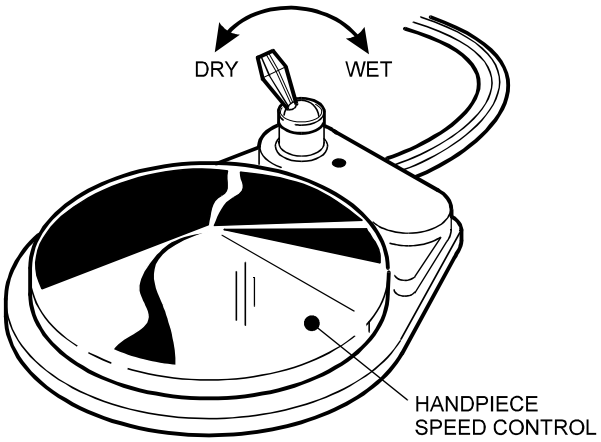
AUTOMATIC HANDPIECE ACTIVATION
The automatic kink valves are designed to permit activation of the selected handpiece when it is removed from its holder. Drive air will be delivered to the withdrawn handpiece when the foot control is depressed.

WET/DRY FOOT CONTROL
The disc-type foot control operates the selected handpiece at varying speeds depending upon the foot pressure applied to the disc. Positioning the coolant water selector toggle allows coolant water for wet cutting to be selected by the motion of the foot. Applying foot pressure to the disc will operate the selected handpiece and, if turned on, water spray (See the illustration below).

WATER ON/OFF VALVE
Located on the foot control, this switch provides water for coolant spray to the handpiece when the switch is moved forward to the “On” position (toward blue dot) and the foot control is depressed (wet cutting). When the valve is in the “Off’ position, water will not be delivered to any handpiece (See the illustration below).

WATER OUTLET AND FLOW CONTROL
Located on the front panel of the console, the water outlet provides water for hydrocolloid tubing or other accessories. The water is controlled by a flow control knob located next to the water outlet. Turning the knob clockwise will decreases water flow and counter clockwise increases the flow.

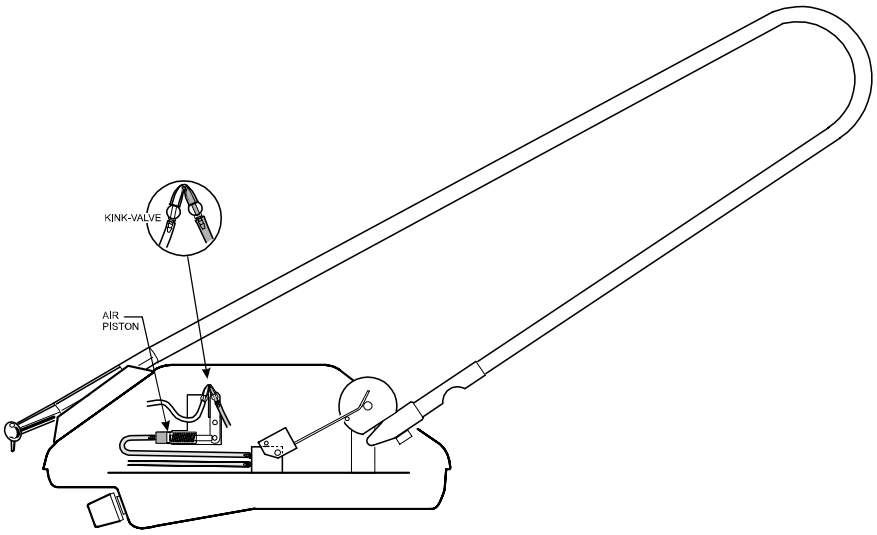




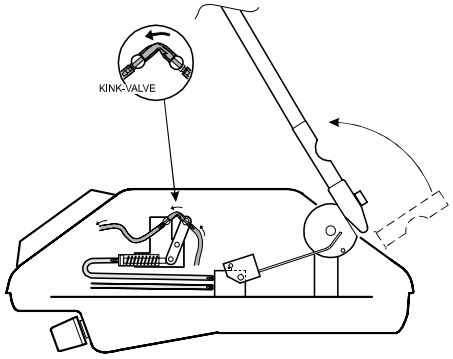
WET/DRY FOOT CONTROL

Operation

The automatic kink valves are designed to permit activation of the selected handpiece when it is removed from is resting position and brought forward of the instrument head. Drive air will be delivered to the withdrawn handpiece when the foot control is depressed (See the illustration).



With the handpiece resting on its pad the air piston holds the Kink-Valve in a closed position.



As the handpiece is lifted up and forward, the air piston is deactivated and allows the Kink-Valve to open. Now the handpiece can be operated with the foot control.

~ BASIC OPERATION ~

1. Turn on the main on/off switch located on the lower front of the International instrument head.

2. Flip the wet/dry toggle on the foot control to the desired position.

3. Lift the handpiece and pull it forward of the instrument head and depress the foot control.

4. If necessary, make adjustments with the control knobs as desired. (See Controls Section).

Cleaning and Maintenance

Knight Mfg. strongly recommends barrier protection as the most effective and safest way to control cross contamination. Some disinfections may cause costly damage to the equipment. If disinfectants are to be used, we recommend the products listed below. Follow manufacturers directions carefully.

CLEANING THE UNIT SURFACES

Surfaces should be wiped regularly with a soft cloth. The equipment should be washed occasionally with soap and water.

CAUTION: Avoid using agents containing Phenol water and/or phenol alcohol. These may cause damage to plastic surfaces.

The following disinfectant/cleaner products have been tested and are recommended for us on plastic and painted surfaces.

Cavicide
distributed by E&D Dental Products Inc., Westfield, NJ

Precise - Hospital Foam Cleaner Disinfectant
manufactured by Caltech Industries, Inc., Midland, MI

CAUTION: Failure to follow manufacturer directions may damage surfaces.

CLEANING HANDPIECE, SYRINGE AND VACUUM HOSES

The hoses can be washed with soap and water.

MAINTAINING THE VACUUM SYSTEM

Use only a cleanser specifically formulated for dental vacuum systems and follow manufacturer directions carefully.

CAUTION: Failure to follow manufacturer directions may damage your vacuum system.

CLEANING THE SOLIDS COLLECTOR

Turn off the vacuum supply. Lift up the cap on top of the solids collector to expose the basket strainer. Empty the basket strainer and scrub it with a brush. To help simplify the basket removal, wet the inside of the solids collector with the syringe after removing the cover. The water will soften the amalgam for easier removal of the basket.

When clean, return the basket to the collector and replace the cap. The solids collector should be cleaned daily to avoid loss of suction. Replacement basket strainer can be ordered under Knight Part Number 151894.

SERVICING THE AIR AND WATER FILTERS

To insure proper air and water flow, the internal air and water filters should be serviced every three months (More or less frequently depending on water quality). This work should be performed by a qualified service technician. Please contact your authorized Knight dealer for more information.

CLEANING AND MAINTENANCE SCHEDULE

	as necessary	daily	other
Unit surfaces	√		
Hoses	√		
Vacuum system	√		
Solids collector		√	
Air & water filters			3 month service

Warranty

WARRANTY

Knight by Midmark products are warranted against defect in material and workmanship for a period of 2 years, unless otherwise indicated in writing, from the time of delivery.

Exceptions:

1) "KINK-VALVE" module carries a 10 year warranty.
2) The original light bulb on a new light carries a 1 year warranty.
3) Accessories not manufactured by Knight are excluded (i.e. Fiber optic systems, Scalers, Electric micromotor systems, Curing light systems, X-ray viewers, etc.)
4) Replacement parts and accessories carry a 90 day warranty.

Knight's sole obligation under the warranty is either to provide parts for the repair or to provide the replacement product (excluding labor and shipping). The buyer shall have no other remedy. All special, incidental and coincidental damage is excluded. Written notice of breach of warranty must be given to Knight within the warranty period.

The warranty does not cover damage resulting from improper installation or maintenance, accident or misuse. The warranty does not cover damage resulting from the use of cleaning, disinfecting or sterilization chemicals and processes.

No other warranties as to merchantability, fitness for use or otherwise are made.

Technical Information

Circuit diagrams, parts lists, technical descriptions, etc. will be provided upon request.

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DECLARATION OF CONFORMITY

MIDMARK CORPORATION

Midmark Corporation declares that SW and S-21 Dental Units conforms to the applicable requirements of the Medical Device Directive 93/42/EEC, Annex V and VII.

Serial Numbers: UA1278, UW01032, UC0971, and UK0148 to present.

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53500 Ernee
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Notified Body
LRQA Limited
Hiramford
Middlemarch Office Village
Siskin Drive
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Certificate #: 961351/B

Quality Assurance Manager

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October 18, 1999

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KA940600

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